

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended): A method for manufacturing a mask blank by depositing a film of a resist liquid on a substrate including a thin film functioning as a transfer pattern by a spin-coating process; covering the surface of the substrate with a covering member; and performing an unnecessary film removal process by dissolving of an unnecessary part of the resist film by supplying a solvent from above the covering member during the rotation of the substrate and the covering member together so that the solvent is supplied to the periphery of the substrate, wherein:

the spin-coating process includes a spin-drying process for preliminary-drying the film of the resist liquid by rotating the substrate, and

a reduced-pressure-drying process for the resist film deposited in the spin-coating process is performed before the unnecessary-film-removing process for removing the unnecessary part of the resist film by dissolving so that a deterioration in an in-plane-film thickness uniformity of the resist film caused by the unnecessary-film-removing process is suppressed,

wherein a difference between a maximum thickness of the resist film and a minimum thickness of the resist film at a region where a transfer pattern is formed is 50 angstroms or less after the unnecessary-film-removal process.

2. (Original): The method for manufacturing the mask blank according to claim 1, wherein:

the spin-coating process is performed in a cup having an opening on an upside by dropping a resist liquid on the surface of the substrate, rotating the substrate at a predetermined rotating speed for a predetermined period of time in order to uniform the film thickness of the

resist liquid, and rotating the substrate at a predetermined rotating speed for a predetermined period of time in order to preliminarily dry the film of the resist liquid.

3. (Original): The method for manufacturing the mask blank according to claim 2, wherein:

the rotating speed of the substrate for the preliminary drying of the film of the resist liquid is lower than that for uniformizing the film thickness of the resist liquid in the spin-coating process.

4. (Previously Presented): The method for manufacturing the mask blank according to claim 2, wherein:

an airstream from the upside of the cup toward the substrate is generated by exhausting at the downside of the cup in the spin-coating process.

5. (Previously Presented): The method for manufacturing the mask blank according to claim 1, wherein:

the degree of vacuum in a substrate-receiving space is stepwise decreased in the reduced-pressure-drying process.

6. (Original): A method for manufacturing a mask blank, comprising:
depositing a resist liquid dropped on a substrate having a thin film by a spin-coating process;

forming a resist film by drying the deposited film of the resist liquid by a spin-drying process;

drying the resist film by a reduced-pressure-drying process;

supplying a solvent for dissolving the resist film to a periphery of the mask blank on which the resist film is formed; and

removing the resist film at the periphery by rotating the mask blank.

7. (Cancelled).

8. (Previously Presented): The method for manufacturing the mask blank according to claim 1 or 6, wherein:

the resist film at a region where a transfer pattern is formed comprises the periphery having a thickness not exceeding that of the central part of the mask blank after the removing of the resist film at the periphery.

9. (Previously Presented): The method for manufacturing the mask blank according to claim 1 or 6, wherein:

the substrate is in a stationary state when the reduced-pressure-drying process is performed.

10. (Previously Presented): The method for manufacturing the mask blank according to claim 6, wherein:

the rotating speed of the substrate in the spin-drying process is lower than that in the spin-coating process for depositing the film of the resist liquid.

11. (Previously Presented): The method for manufacturing the mask blank according to claim 6, wherein:

the mask blank is heated for drying the resist film after the removing of the resist film at the periphery.

12. (Previously Presented): The method for manufacturing the mask blank according to claim 1, wherein:

the spin-drying process dries the film of the resist liquid so that the resist film formed at the periphery of the substrate does not have fluidity.

13. (Previously Presented): The method for manufacturing the mask blank according to claim 1, wherein:

the reduced-pressure-drying process dries the resist film to an extent not to flow by a temperature distribution or a centrifugal force in the unnecessary-film-removing process.

14. (Previously Presented): The method for manufacturing the mask blank according to claim 1, wherein:

the substrate is a quadrangular substrate.

15. (Previously Presented): The method for manufacturing the mask blank according to claim 6, wherein:

the spin-drying process dries the deposited film of the resist liquid so that the resist film formed at the periphery of the mask blank does not have fluidity.

16. (Previously Presented): The method for manufacturing the mask blank according to claim 6, wherein:

the reduced-pressure-drying process dries the resist film to an extent not to flow by a temperature distribution or a centrifugal force in the removing of the resist film.

17. (Previously Presented): The method for manufacturing the mask blank according to claim 6, wherein:

the substrate is a quadrangular substrate.

18. (New): A method for manufacturing a mask blank by depositing a film of a resist liquid on a substrate including a thin film functioning as a transfer pattern by a spin-coating process; covering the surface of the substrate with a covering member; and performing an unnecessary-film-removing process by dissolving of an unnecessary part of the resist film by supplying a solvent from above the covering member during the rotation of the substrate and the covering member together so that the solvent is supplied to the periphery of the substrate, wherein:

the spin-coating process includes a spin-drying process for preliminary-drying the film of the resist liquid by rotating the substrate,

a reduced-pressure-drying process for the resist film deposited in the spin-coating process is performed before the unnecessary-film-removing process for removing the unnecessary part of the resist film by dissolving to suppress the flow of the resist film from the central part of the substrate toward the periphery of the substrate by the temperature distribution in the unnecessary-film-removing process so that a deterioration in an in-plane-film thickness uniformity of the resist film caused by the unnecessary-film-removing process is suppressed.

19. (New): A method for manufacturing a mask blank by depositing a film of a resist liquid on a substrate including a thin film functioning as a transfer pattern by a spin-coating process; covering the surface of the substrate with a covering member; and performing an unnecessary-film-removing process by dissolving of an unnecessary part of the resist film by supplying a solvent from above the covering member during the rotation of the substrate and the covering member together so that the solvent is supplied to the periphery of the substrate, wherein:

the spin-coating process includes a spin-drying process for preliminary-drying the film of the resist liquid by rotating the substrate,

a reduced-pressure-drying process for the resist film deposited in the spin-coating process is performed before the unnecessary-film-removing process for removing the unnecessary part of the resist film by dissolving to suppress the flow of the resist film from the central part of the substrate toward the periphery of the substrate by the temperature distribution in the unnecessary-film-removing process so that a deterioration in an in-plane-film thickness uniformity of the resist film caused by the unnecessary-film-removing process is suppressed,

wherein a difference between a maximum thickness of the resist film and a minimum thickness of the resist film at a region where a transfer pattern is formed is 50 angstroms or less after the removing of the resist film at the periphery.

20. (New): A mask blank, comprising:

a substrate including a thin film functioning as a transfer pattern; and

a resist film formed on the substrate;

wherein an unnecessary part of the resist film is removed at a periphery of the substrate,
and

wherein a difference between a maximum thickness of the resist film and a minimum thickness of the resist film at a region where the transfer pattern is formed is 50 angstroms or less.

21. (New): A mask blank according to claim 20 wherein:

the unnecessary part of the resist film is removed by covering a surface of the substrate with a covering member and supplying a solvent from above the covering member during the rotation of the substrate and the covering member together so that the solvent is supplied to the periphery of the substrate.

22. (New): A mask blank according to claim 20 wherein:

the resist film at a region where the transfer pattern is formed comprises the periphery having a thickness not exceeding that of a central part of the mask blank.

23. (New): A mask blank according to claim 20 wherein:

the mask blank is adapted to a transfer mask and comprises an ArF excimer laser exposure mask, an F2 excimer laser exposure mask or an extreme ultraviolet rays (EUV) exposure mask.

24. (New): A transfer mask produced by using the mask blank according to claim 20.